CERTIFIED MAIL 7015 0640 0007 1325 8814

July 27, 2018

Air and Radiation Division
U. S. Environmental Protection Agency, Region V
77 West Jackson Boulevard,
Chicago, IL 60604

Re: Submittal of U. S. Steel – Minntac and Keetac Compliance Reports per the Requirements of 40 CFR Part 52.1235(e)(5) through (7) – Taconite Regional Haze FIP

U. S. Steel – Keetac (Keetac)

Keetac utilizes Ametek Model 920 analyzers to measure NOx and SO_2 (Serial Number AE-920-10086-1).

Keetac submits quarterly excess emission reports to the Minnesota Pollution Control Agency. Therefore, to fulfill the requirements of the excess emissions and monitoring system performance reports, a copy of the quarterly excess emissions report for the 2nd quarter is included in this submittal. Where EPA's requirements per the regulation differ from Minnesota's requirements, this information is also being included.

Any periods of startup and shut down are reported in Section 5 of the DRF-1 Form included in this submittal. There were no deviations during this reporting period.

The emission limitation for SO2 (the only pollutant currently in effect) is 225 lbs/hr – 30 day rolling average. There were no deviations associated with the emission limit.

The last CEMS CGA was conducted on June 18, 2018 and is included in this report. The last CEMS RATA was conducted on March 20, 2018 and the report has been submitted under separate cover letter during the previous quarter.

U. S. Steel – Minntac (Minntac)

Minntac utilizes Ametek Model 920 analyzers to measure NOx and SO_2. The table below outlines the serial numbers for each of the units:

Line 3	AE-920-10086-1
Line 4	AE-920-10086-2
Line 5	AE-920-10086-3
Line 6	ZA-920-10336-1
Line 7	ZA-920-10336-2

Minntac submits quarterly excess emission reports to the Minnesota Pollution Control Agency. Therefore, to fulfill the requirements of the excess emissions and monitoring system performance reports, a copy of the quarterly excess emissions report for the 2nd quarter is included in this submittal. Where EPA's requirements per the regulation differ from Minnesota's requirements, this information is also being included.

Any periods of startup and shut down are reported in Section 5 of the DRF-1 Form included in this submittal. There were no deviations during this reporting period.

The emission limitation for SO_2 is a 30-day rolling average aggregate limit for indurating lines 3-7 of 498 lbs/hr when all lines are producing flux pellets, 630 lbs/hr when producing acid pellets or using the equation in 40 CFR 52.1235(b)(2)(iii) when the 30 day period includes both acid and flux pellet production. There were no deviations associated with the emission limit.

The emission limitation for NOx on Line 6 is 1.5 lbs/MMBtu based on a 30-day rolling average. However, for any 30 or more consecutive days when only natural gas is used, a limit of 1.2 lbs/MMBtu applies. There were no deviations associated with the emission limit for Line 6.

The latest CEMS RATA was conducted on Lines 3-7 on May 16-17 and May 21-23, 2018. This report has been submitted separately. The last CGAs were performed on February 22, 2018 and the results were provided in last quarters report.

If you should require any additional information, please contact me at scampbell@uss.com or 218-778-8684.

Sincerely,

Stephani Campbell

Stephani Campbell
Environmental Control

U. S. Steel Corporation
Minnesota Ore Operations
P.O. Box 217
Keewatin, MN 55753

CERTIFIED MAIL 7015 0640 0007 1325 8791

July 27, 2018

Air Quality Compliance Tracking Coordinator
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Re: U. S. Steel – Keetac Administrative Order by Consent
Quarterly Continuous Monitoring System Deviation Report

Dear Supervisor:

Enclosed with this letter is U. S. Steel – Keetac's (Keetac) Quarterly Continuous Emission Monitoring System Deviation report for the 2nd quarter of 2018. The Continuous Emission Monitoring System (CEMS) was certified on Keetac's Waste Gas Stack on November 6th, 2008. The CEMS was installed as a part of Keetac's Administrative Order by Consent with the State of Minnesota effective September 27th, 2007.

Deviations associated with Emission Limits

There was one deviation associated with emission limits.

Deviations associated with Monitor Downtime

There were three instances of monitor downtime that affected either NO_x or SO_2. The individual downtime duration and cause is listed in the monitor downtime section of this report.

Deviations associated with Monitor Bypass

Keetac utilizes a grate/kiln system for pelletizing taconite. Although this is an extremely hot process (with temperatures exceed 2500 °F in the kiln), the equipment is designed to withstand the high temperatures and will do so during normal operation. However, the grate is very susceptible to heat damage during upset conditions or if stopped for any reason while it is hot. To prevent equipment damage and heat related safety issues during these situations, large amounts of heat must be released from the grate as soon as possible. For that reason the system was designed

such that when the grate stops or gets overheated, a stack cap is lifted to release heat through an emergency stack. At this time the monitor is bypassed. These situations are the only times the monitor is bypassed. Because they represent upset conditions or process downtime (production loss), the company has a strong vested interest in minimizing both the number and duration of occurrences.

The times listed in the monitor bypass section are when the grate emergency stack cap is open and there is combustion in the kiln. This is the only time when any NO_x and SO_2 are emitted. Times when the cap is open but there is no combustion in the kiln are not listed.

If you have any questions concerning these forms, please contact Stephani Campbell at (218) 778-8684.

Sincerely,

Lawrence Sutherland
General Manager
U. S. Steel - Minnesota Ore Operations

Enclosure

cc: Steve Palzkill – MPCA
File

Minnesota Pollution Control Agency

AIR QUALITY REPORTING FORM

Checklist For Routine Submittals
-Typical Annual, Semiannual and Quarterly Submittals for Air Quality Permits

Minnesota Pollution Control Agency
520 Lafayette Road, St. Paul, MN 55155-4194 (651) 296-6300

Form AQRF
8/01/05

Facility Name: U. S. STEEL - KEETAC

Facility ID #: 62B **County Facility is located in:** ITASCA

Facility Address: 1 MINE ROAD
KEEWATIN, MN **Zip Code:** 55753

Mailing Address: P.O.BOX 217
KEEWATIN, MN **Zip Code:** 55753

Facility Contact Person (Print Name): Stephani Campbell
Facility Contact Person's Title: Environmental Control Engineer
Contact Person's Phone # (Include Area Code): (218) 778-8684

THE FOLLOWING REPORTS ARE INCLUDED IN THIS SUBMITTAL (CHECK ALL THAT APPLY):

ANNUAL REPORTS

- ☐ Compliance Certification Report (CR-04)
- ☐ NESHAP Submittal
- ☐ Waste Combustor Report for Class IV Waste Combustors
- ☐ Equipment List
- ☐ Relative Accuracy Test Audit (RATA) Results Summary (CEMS) Date(s) Completed: _____

SEMIANNUAL REPORTS

- ☐ NESHAP Submittal
- ☐ Deviations Report (DRF-1 or DRF-2)

Year: _____

☐ 1st Half ☐ 2nd Half

- ☐ Calibration Error Audit Results Summary (COMS) Date(s) Completed: _____
- ☒ Cylinder Gas Audit (CGA) Summary (CEMS) Date(s) Completed: 6/18/18

QUARTERLY REPORTS

- ☐ Waste Combustor Quarterly Report (Class I, II, III, A, C, or D Waste Combustors)
- ☐ NESHAP Quarterly Submittal
- ☐ Direct Heating Units Combusting Solid Waste Report
- ☒ Excess Emissions Report (EER) (CEMS or COMS) (DRF-1 or DRF-2)

Year: 2018

☐ 1st Quarter ☒ 2nd Quarter ☐ 3rd Quarter ☐ 4th Quarter

- ☐ Indirect Heating Units Combusting Solid Waste Report
- ☐ Linearity Check Results Summary (CEMS) Date(s) Completed: _____

OTHER REPORTS

- ☐ Please Specify: _____ Date(s) Completed (if applicable) _____

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Excess Emissions Reporting Form - DRF-1

Continuous Monitoring Systems Reporting Form

Please note: This form has been updated. Please print, complete and remit only the forms. Please see the instructions in the Word version of DRF-1 to ensure proper use and understanding of definitions. DO NOT print and return the instructions.

Use this form to record and report excess emissions (EE) that are identified by *Continuous Monitoring Systems*. This includes Continuous Emission Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems (COMS). DRF-1 is the form you must use to report excess emissions from a stack as recorded by your facility's Continuous Emission Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems (COMS).

Address hard copy

Compliance Tracking Coordinator, Fourth Floor
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

1) General Facility Information

Company name: U. S. Steel - Keetac

AQ file no.: 62B

AQ permit no.: 13700063-005

Report covers Quarter: Second

Year: 2018

2) CEMS/COMS Data Summary Table

				Duration of Monitor Downtime		Duration of Excess Emissions (EE)			
2a) Monitor ID Number	2b) Monitor ID Pollutant	2c) EU/SV ID Number	2d) Total Operating Time (TOT) (hr)	3i) Total Duration of Monitor Downtime (hr)	2e) **Downtime % Of TOT**	4l) Cumulative Duration of Exempt EE	2f) **Exempt EE % of TOT**	4m) Cumulative Total Duration of All EE	2g) **Total EE % of TOT**
Line 2	NOx	SV 051	1939	1	0.1%	N/A	N/A	0	0.00%
Line 2	SO2	SV 051	1939	2	0.1%	N/A	N/A	1	0.05%

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Monitor ID Pollutant or Parameter	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (min)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective ActionTaken (clarifying comments)
Line 2	SO2	SV 051	06/18/2018 11:00:00	06/18/2018 11:59:00	60	Preventative Maintenance	Performed necessary maintenance
Line 2	SO2	SV 051	06/29/2018 07:00:00	06/29/2018 07:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 2	NOx	SV 051	06/29/2018 07:00:00	06/29/2018 07:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance

3i) Total duration of downtime: 3 **hours**

*Opacity time listed in minutes

4) Duration of Excess Emissions: Provide the following information regarding each individual excess emission

4a) Emission Unit ID Number	4b) Monitor ID Number	4c) Pollutant or Parameter Monitored	4d) Beginning Date and Time of EE	4e) End Date and Time of EE	4f) Limit and Averaging Period	4g) Highest Reading of EE with Units (example: 5 lb/hr, etc)	4h) Duration of Exempt EE (include these entries as part of 4i)	4i) Total Duration of All EE	4j) Cause of EE (clarifying comments)	4k) Corrective Action Taken (clarifying comments)
SV051	CM001	NOx	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV051	CM005	SO2	6/11/2018 9:00	6/11/2018 9:59	290 lb - 1Hr	301 lb/hr	0	1	EE occurred while scrubber operating normally at 7.5 pH setpoint, suspect higher concentration feed material	Cut production and increase pH setpoint in the scrubber to 8.0

4l) Cumulative Duration of Exempt Excess Emissions:	0		4m) Cumulative Total Duration	1 Hrs

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were

5a) Monitor ID number	5b) Emission Unit Required to be Monitored	5c) Pollutant and Limit Required to be Monitored	5d) Beginning Date and Time of Bypass Period	5e) End date and time of bypass period	5f) Duration of monitor bypass (min)	5g) Was P.C.E. operating during bypass period?	5h) Duration of allowable monitor bypass (min)	5i) Reason for monitor bypass (clarifying comments)	5j) Corrective action taken (clarifying comments)
Line 2	SV 051	NOx and SO2	4/10/2018 13:31	4/10/2018 14:09	38	Yes	38	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/21/2018 6:59	4/21/2018 7:16	16	Yes	16	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/21/2018 9:14	4/21/2018 10:06	52	Yes	52	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/21/2018 10:06	4/21/2018 10:09	3	Yes	3	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/22/2018 13:50	4/22/2018 19:31	341	Yes	341	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/22/2018 19:31	4/22/2018 19:35	4	Yes	4	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/22/2018 20:24	4/22/2018 21:00	36	Yes	36	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/22/2018 21:00	4/22/2018 23:11	131	Yes	131	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/23/2018 4:19	4/23/2018 5:00	41	Yes	41	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/23/2018 5:00	4/23/2018 5:17	17	Yes	17	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/23/2018 5:18	4/23/2018 5:23	6	Yes	6	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/23/2018 6:46	4/23/2018 8:19	93	Yes	93	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/23/2018 8:19	4/23/2018 8:21	2	Yes	2	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/24/2018 7:50	4/24/2018 8:50	60	Yes	60	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	4/25/2018 22:00	4/26/2018 3:59	360	Yes	360	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	5/7/2018 8:59	5/7/2018 14:00	300	Yes	300	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	5/7/2018 14:00	5/7/2018 22:00	480	Yes	480	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	5/7/2018 22:00	5/8/2018 6:00	480	Yes	480	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	5/8/2018 6:00	5/8/2018 14:00	480	Yes	480	Bypass necessary to protect plant equipment	N/A

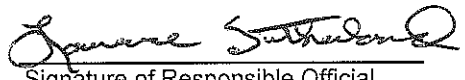
5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (min)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass (min)	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 2	SV 051	NOx and SO2	5/8/2018 14:00	5/8/2018 22:00	480	Yes	480	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	5/8/2018 22:00	5/8/2018 23:40	100	Yes	100	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/3/2018 12:14	6/3/2018 13:00	46	Yes	46	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/3/2018 13:00	6/3/2018 13:49	49	Yes	49	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/6/2018 8:25	6/6/2018 9:44	79	Yes	79	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/6/2018 9:44	6/6/2018 9:46	2	Yes	2	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/6/2018 10:34	6/6/2018 11:07	33	Yes	33	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/6/2018 12:02	6/6/2018 13:00	58	Yes	58	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/6/2018 13:00	6/6/2018 13:07	7	Yes	7	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/6/2018 13:08	6/6/2018 13:09	1	Yes	1	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/6/2018 13:23	6/6/2018 14:01	38	Yes	38	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/6/2018 14:01	6/6/2018 14:03	1	Yes	1	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/6/2018 15:34	6/6/2018 15:43	9	Yes	9	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/17/2018 15:35	6/17/2018 15:43	8	Yes	8	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/17/2018 17:29	6/17/2018 18:30	61	Yes	61	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/17/2018 18:30	6/17/2018 18:32	2	Yes	2	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/22/2018 11:43	6/22/2018 12:07	24	Yes	24	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	6/29/2018 7:36	6/29/2018 8:36	60	Yes	60	Bypass necessary to protect plant equipment	N/A

5a) Monitor ID number	5b) Emission Unit Required to be Monitored	5c) Pollutant and Limit Required to be Monitored	5d) Beginning Date and Time of Bypass Period	5e) End date and time of bypass period	5f) Duration of monitor bypass (min)	5g) Was P.C.E. operating during bypass period?	5h) Duration of allowable monitor bypass (min)	5i) Reason for monitor bypass (clarifying comments)	5j) Corrective action taken (clarifying comments)

5k) Total duration of allowable monitor bypass: 67 hours

6) CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.



Signature of Responsible Official

Lawrence Sutherland

Printed Name of Responsible Official

General Manager- Minnesota Ore

Title

July 27, 2018

Date

COMS audits

Subject item	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A								

Cylinder gas audit's (CGA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
SV051/EU030	2091	CM001	NOx	6/18/2018	Low 1.0% Mid -0.1%	Pass	9/30/2018	
SV051/EU030	2091	CM005	SO2	6/18/2018	Low 0.2% Mid -0.5%	Pass	9/30/2018	

Linearity

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A					Low Mid High			

Relative accuracy test audit (RATA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Relative accuracy	Pass/fail	Next test due by:	Comments
SV051		CM001	NOx	3/20/2018	1.5%	Pass	3/31/2019	
SV051		CM005	SO2	3/20/2018	16.4%	Pass	3/31/2019	

CGA Test Report - 2018Q2

Facility Name: US Steel Location: Keetac

WGS SO2 Audit Test Results Analyzer Span: 250.0 ppm

Mfr & Model: ametek 920 so2 Serial Number: AE-920-10086-1

Low-Level Calibration Gas (20-30% of Span) (50.0 ppm - 75.0 ppm)	Concentration: 62.6 Cylinder No.: CC168937 Expiration Date: 11/08/20
Mid-Level Calibration Gas (50-60% of Span) (125.0 ppm - 150.0 ppm)	Concentration: 141.4 Cylinder No.: SG9169308 Expiration Date: 10/22/20

Test Date: 06/18/18 Tester: Nick Wilson

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	11:03:00	63.0	11:06:00	141.0
Run 2	11:13:00	62.0	11:16:00	140.0
Run 3	11:23:00	63.0	11:26:00	141.0
Avg. Monitor Response		62.7		140.7
Calibration Error		0.2		-0.5
Absolute Difference		0.1		0.7
Test Status		Pass		Pass

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

CGA Test Report - 2018Q2

Facility Name: US Steel Location: Keetac

WGS NOx Audit Test Results Analyzer Span: 600.0 ppm

Mfr & Model: ametek 920 NOx Serial Number: AE-920-10086-1

Low-Level Calibration Gas (20-30% of Span) (120.0 ppm - 180.0 ppm)	Concentration: 130.0 Cylinder No.: CC422243 Expiration Date: 02/24/21
Mid-Level Calibration Gas (50-60% of Span) (300.0 ppm - 360.0 ppm)	Concentration: 324.0 Cylinder No.: CC322615 Expiration Date: 08/30/24

Test Date: 06/18/18 Tester: Nick Wilson

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	10:03:00	131.0	10:06:00	323.0
Run 2	10:13:00	131.0	10:16:00	324.0
Run 3	10:23:00	132.0	10:26:00	324.0
Avg. Monitor Response		131.3		323.7
Calibration Error		1.0		-0.1
Absolute Difference		1.3		0.3
Test Status		Pass		Pass

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Summary Table by Monitor Downtime Type
U. S. Steel - Keetac
2nd Quarter 2018

NOx

Line	Duration (Hrs)	Description
Line 2	0	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	0	Excess Drift Primary Analyzer
	1	Primary Analyzer Malfunction
	0	Preventative Maintenance

SO2

Line	Duration (Hrs)	Description
Line 2	0	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	0	Excess Drift Primary Analyzer
	1	Primary Analyzer Malfunction
	1	Preventative Maintenance

CERTIFIED MAIL 7015 0640 0007 1325 8777

July 27, 2018

Air Quality Compliance Tracking Coordinator
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Re: United States Steel Corporation, Minnesota Ore Operations – Minntac
Air Emissions Permit No. 13700005-006
Quarterly Continuous Monitoring System Deviation Report

Dear Supervisor:

Enclosed with this letter is U. S. Steel – Minntac's (Minntac) Quarterly Excess Emissions Reporting Form for the 2nd quarter of 2018. NOx/SO_2 Continuous Emission Monitoring Systems (CEMS) are certified on all Agglomerator Waste Gas Lines.

Deviations associated with Emission Limits

There were no deviations during the 2nd quarter of 2018.

Deviations associated with Monitor Downtime

There were 43 instances of monitor downtime for either NOx or SO_2. The individual downtime durations and causes are listed in the monitor downtime section of this report.

Deviations associated with Monitor Bypass

Minntac utilizes a grate/kiln system for pelletizing taconite. Although this is an extremely hot process (with temperatures exceed 2500°F in the kiln), the equipment is designed to withstand the high temperatures and will do so during normal operation. However, the grate is very susceptible to heat damage during upset conditions or if stopped for any reason while it is hot. To prevent equipment damage and heat related safety issues during these situations, large amounts of heat must be released from the grate as soon as possible. For that reason the system was designed such that when the grate stops or gets overheated, a stack cap is lifted to release heat through an emergency stack. At this time the monitor is bypassed. These situations are the only times the monitor is bypassed. Because they represent upset conditions or process downtime (production loss), the company has a strong vested interest in minimizing both the number and duration of occurrences.

The times listed in the monitor bypass section are when the grate emergency stack cap is open and there is combustion in the kiln. This is the only time when any NO_x or SO_2 is emitted. Times when the cap is open but there is no combustion in the kiln are not listed.

If you have any questions concerning these forms, please contact Stephani Campbell at (218) 778-8684.

Sincerely,

Lawrence Sutherland
General Manager – Minnesota Ore Operations

Enclosure

cc: Steve Palzkill – MPCA
File

Minnesota Pollution Control Agency

AIR QUALITY REPORTING FORM

Checklist For Routine Submittals
-Typical Annual, Semiannual and Quarterly Submittals for Air Quality Permits

Minnesota Pollution Control Agency
520 Lafayette Road, St. Paul, MN 55155-4194 (651) 296-6300

Form AQRF
8/01/05

Facility Name: United States Steel Corporation, Minnesota Ore Operations - Minntac

Facility ID #: 13700005 **County Facility is located in:** ST. LOUIS

Facility Address: COUNTY RD. 102
MOUNTAIN IRON, MN **Zip Code:** 55768

Mailing Address: P.O.BOX 417
MOUNTAIN IRON, MN **Zip Code:** 55768

Facility Contact Person (Print Name): Stephani Campbell
Facility Contact Person's Title: Environmental Control
Contact Person's Phone # (Include Area Code): (218) 778-8684

THE FOLLOWING REPORTS ARE INCLUDED IN THIS SUBMITTAL (CHECK ALL THAT APPLY):

ANNUAL REPORTS

- ☐ Compliance Certification Report (CR-04)
- ☐ NESHAP Submittal
- ☐ Waste Combustor Report for Class IV Waste Combustors
- ☐ Equipment List
- ☒ Relative Accuracy Test Audit (RATA) Results Summary (CEMS) Date(s) Completed: May 16-17, May 21-23, 2018

SEMIANNUAL REPORTS

- ☐ NESHAP Submittal
- ☐ Deviations Report (DRF-1 or DRF-2)

Year: _____

☐ 1st Half ☐ 2nd Half

- ☐ Calibration Error Audit Results Summary (COMS) Date(s) Completed: _____
- ☐ Cylinder Gas Audit (CGA) Summary (CEMS) Date(s) Completed: _____

QUARTERLY REPORTS

- ☐ Waste Combustor Quarterly Report (Class I, II, III, A, C, or D Waste Combustors)
- ☐ NESHAP Quarterly Submittal
- ☐ Direct Heating Units Combusting Solid Waste Report
- ☒ Excess Emissions Report (EER) (CEMS or COMS) (DRF-1 or DRF-2)

Year: 2018

☐ 1st Quarter ☒ 2nd Quarter ☐ 3rd Quarter ☐ 4th Quarter

- ☐ Indirect Heating Units Combusting Solid Waste Report
- ☐ Linearity Check Results Summary (CEMS) Date(s) Completed: _____

OTHER REPORTS

☐ Please Specify: _____ Date(s) Completed (if applicable) _____

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

DRF-1

Excess Emissions Reporting Form

Air Quality Permit Program

Doc Type: Excess Emission Report

Note: Please complete, and remit **only** the forms. Please see the instructions to ensure proper use and understanding of definitions.
Do not print and return the instructions.

General Information about Deviation and Compliance Reporting

If your permit requires you to submit deviation reports or an annual compliance certification, you should use the Deviation Reporting Forms (DRFs) and Annual Compliance Certification Report (CR-04), unless you get Minnesota Pollution Control Agency (MPCA) approval to use another format or your facility's permit specifies otherwise. There are two separate DRF forms: DRF-1 and DRF-2.

DRF-1 is used to report direct excess stack emissions (EE) recorded by Continuous Emission Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems

DRF-2 is used to report deviations recorded by periodic monitoring systems, deviations of permitted operating conditions and surrogate parameters whether recorded
Some examples: flow rate, temperature, throughput, control equipment operating parameters, fuel-use records

CR-04: is used to report facility compliance status at the end of each year if required by your permit.

Address hard copy report submittals to: Air Compliance Tracking Coordinator, Minnesota Pollution Control Agency
520 Lafayette Road North, St. Paul, Minnesota 55155-4195

Or e-mail a signed and scanned PDF copy to: AQRoutineReport.PCA@state.mn.us
(see e-mail instructions in "Routine Air Report Instructions Letter" at:
http://www.pca.state.mn.us/nwqh472

1) General Facility Information

Facility name: United States Steel Corporation, Minnesota Ore Operations, Minntac
AQ file no.: 26A
County: St. Louis
AQ permit #: 13700005
Report covers quarter: Second
Year: 2018

2) CEMS/COMS Data Summary Table

				Duration of Monitor Downtime		Duration of Excess Emissions (EE)			
2a) Monitor ID Number	2b) Monitor ID Pollutant	2c) EU/SV ID Number	2d) Total Operating Time (TOT)	3i) Total Duration of Monitor Downtime (hr)	2e) **Downtime % Of TOT**	4l) Cumulative Duration of Exempt EE	2f) **Exempt EE % of TOT**	4m) Cumulative Total Duration of All EE	2g) **Total EE % of TOT**
MR 001	NOx	SV-103	2176	24	**1.1%**	0	**0%**	0	**0%**
MR 002	NOx	SV-118	1851	10	**0.5%**	0	**0%**	0	**0%**
MR 003	NOx	SV-127	2130	24	**1.1%**	0	**0%**	0	**0%**
MR 004	NOx	SV-144	2089	24	**1.1%**	0	**0%**	0	**0%**
MR 005	NOx	SV-151	2084	6	**0.3%**	0	**0%**	0	**0%**
MR 001	SO2	SV-103	2176	23	**1.1%**	0	**0%**	0	**0%**
MR 002	SO2	SV-118	1851	8	**0.4%**	0	**0%**	0	**0%**
MR 003	SO2	SV-127	2130	13	**0.6%**	0	**0%**	0	**0%**
MR 004	SO2	SV-144	2089	14	**0.7%**	0	**0%**	0	**0%**
MR 005	SO2	SV-151	2084	0	**0.0%**	0	**0%**	0	**0%**

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Pollutant or parameter monitored	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (minutes)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective ActionTaken (clarifying comments)
Line 3	NOx	SV103	04/10/2018 03:00:00	04/10/2018 09:59:00	420	Data Handling System Malfunction	Performed necessary maintenance
Line 3	NOx	SV103	04/10/2018 10:00:00	04/10/2018 10:59:00	60	Sample Interface Malfunction	Performed necessary maintenance
Line 3	NOx	SV103	04/10/2018 11:00:00	04/10/2018 13:59:00	180	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	NOx	SV103	04/10/2018 14:00:00	04/10/2018 14:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	04/23/2018 12:00:00	04/23/2018 12:59:00	60	Sample Interface Malfunction	Performed necessary maintenance
Line 3	NOx	SV103	04/27/2018 05:00:00	04/27/2018 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	05/15/2018 06:00:00	05/15/2018 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	05/28/2018 07:00:00	05/28/2018 10:59:00	240	Excess Drift Ancillary Analyzer	Performed necessary maintenance
Line 3	NOx	SV103	05/31/2018 13:00:00	05/31/2018 14:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 3	NOx	SV103	06/04/2018 06:00:00	06/04/2018 07:59:00	120	Excess Drift Ancillary Analyzer	Performed necessary maintenance
Line 3	NOx	SV103	06/04/2018 08:00:00	06/04/2018 08:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	04/10/2018 03:00:00	04/10/2018 09:59:00	420	Data Handling System Malfunction	Performed necessary maintenance
Line 3	SO2	SV103	04/10/2018 10:00:00	04/10/2018 13:59:00	240	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	SO2	SV103	04/10/2018 14:00:00	04/10/2018 14:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	04/27/2018 05:00:00	04/27/2018 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	05/15/2018 06:00:00	05/15/2018 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	05/28/2018 07:00:00	05/28/2018 10:59:00	240	Excess Drift Ancillary Analyzer	Performed necessary maintenance
Line 3	SO2	SV103	05/31/2018 13:00:00	05/31/2018 14:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 3	SO2	SV103	06/04/2018 06:00:00	06/04/2018 07:59:00	120	Excess Drift Ancillary Analyzer	Performed necessary maintenance
Line 3	SO2	SV103	06/04/2018 08:00:00	06/04/2018 08:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	NOx	SV118	04/24/2018 20:00:00	04/25/2018 01:59:00	360	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	NOx	SV118	05/02/2018 12:00:00	05/02/2018 13:59:00	120	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 4	NOx	SV118	05/31/2018 13:00:00	05/31/2018 14:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	SO2	SV118	04/24/2018 20:00:00	04/25/2018 01:59:00	360	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	SO2	SV118	05/31/2018 13:00:00	05/31/2018 14:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	NOx	SV127	04/10/2018 03:00:00	04/10/2018 09:59:00	420	Data Handling System Malfunction	Performed necessary maintenance
Line 5	NOx	SV127	04/11/2018 20:00:00	04/12/2018 08:59:00	780	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 5	NOx	SV127	04/12/2018 09:00:00	04/12/2018 09:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	NOx	SV127	04/30/2018 10:00:00	04/30/2018 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	NOx	SV127	05/31/2018 13:00:00	05/31/2018 14:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	SO2	SV127	04/03/2018 06:00:00	04/03/2018 07:59:00	120	Excess Drift Primary Analyzer	Performed necessary maintenance

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a)	3b)	3c)	3d)	3e)	3f)	3g)	3h)
Monitor ID Number	Pollutant or parameter monitored	Emission Unit Being Monitored	Beginning Date and Time of Downtime	End Date and Time of Downtime	Duration of Downtime (minutes)	Reason for Monitor Downtime (clarifying comments)	Corrective ActionTaken (clarifying comments)
Line 5	SO2	SV127	04/03/2018 08:00:00	04/03/2018 08:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	SO2	SV127	04/10/2018 03:00:00	04/10/2018 09:59:00	420	Data Handling System Malfunction	Performed necessary maintenance
Line 5	SO2	SV127	04/30/2018 10:00:00	04/30/2018 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	SO2	SV127	05/31/2018 13:00:00	05/31/2018 14:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	05/04/2018 15:00:00	05/05/2018 13:59:00	1,380	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 6	NOx	SV144	05/05/2018 14:00:00	05/05/2018 14:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	05/05/2018 06:00:00	05/05/2018 13:59:00	480	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 6	SO2	SV144	05/05/2018 14:00:00	05/05/2018 14:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	05/10/2018 06:00:00	05/10/2018 09:59:00	240	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 6	SO2	SV144	05/10/2018 10:00:00	05/10/2018 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	05/31/2018 03:00:00	05/31/2018 07:59:00	300	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 7	NOx	SV151	05/31/2018 08:00:00	05/31/2018 08:59:00	60	Automatic Calibration	Performed necessary maintenance
					3i) Total duration of downtime:	146	hours

4) Duration of Excess Emissions: Provide the following information regarding each individual excess emission identified by a monitor. Make a separate table for each monitor, as needed.

4a) Emission Unit ID Number	4b) Monitor ID Number	4c) Pollutant or Parameter Monitored	4d) Beginning Date and Time of EE	4e) End Date and Time of EE	4f) Limit and Averaging Period	4g) Highest Reading of EE with Units (example: 5 lb/hr, etc)	4h) Duration of Exempt EE (include these entries as part of 4i)	4i) Total Duration of All EE	4j) Cause of EE (clarifying comments)	4k) Corrective Action Taken (clarifying comments)
SV-103	MR 001	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-118	MR 002	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-127	MR 003	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-144	MR 004	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-151	MR 005	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
						4l) Cumulative Duration of Exempt Excess Emissions:		0	4m) Cumulative Total	0

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 3	SV103	NOx/SO2	4/1/18 20:18	4/1/18 21:23	65	YES	65	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/3/18 7:11	4/3/18 7:37	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/4/18 8:04	4/4/18 9:49	104	YES	104	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/4/18 10:03	4/4/18 11:21	78	YES	78	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/4/18 11:25	4/4/18 11:29	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/5/18 10:12	4/5/18 10:40	28	YES	28	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/10/18 2:40	4/10/18 3:24	44	YES	44	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/17/18 13:27	4/17/18 14:38	70	YES	70	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/18/18 12:19	4/18/18 17:07	288	YES	288	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/22/18 22:05	4/22/18 22:25	20	YES	20	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/23/18 17:05	4/23/18 17:29	24	YES	24	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/23/18 18:43	4/23/18 21:24	161	YES	161	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/24/18 16:03	4/24/18 18:49	165	YES	165	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/26/18 10:04	4/26/18 11:45	101	YES	101	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/27/18 5:18	4/27/18 5:26	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	4/27/18 5:38	4/27/18 6:35	56	YES	56	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	5/2/18 10:06	5/2/18 10:36	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	5/2/18 14:45	5/2/18 14:53	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	5/3/18 11:39	5/3/18 11:57	18	YES	18	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 3	SV103	NOx/SO2	5/5/18 2:45	5/5/18 3:05	20	YES	20	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	5/5/18 14:18	5/5/18 14:58	40	YES	40	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	5/7/18 5:36	5/7/18 12:02	386	YES	386	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	5/7/18 12:21	5/7/18 12:43	22	YES	22	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	5/15/18 22:32	5/16/18 0:59	146	YES	146	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	5/16/18 8:59	5/16/18 21:58	779	YES	779	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/3/18 4:15	6/3/18 5:18	62	YES	62	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/4/18 19:18	6/4/18 20:14	56	YES	56	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/5/18 2:26	6/5/18 2:46	20	YES	20	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/6/18 1:16	6/6/18 1:30	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/6/18 9:54	6/6/18 10:36	42	YES	42	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/6/18 12:56	6/6/18 13:10	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/7/18 9:43	6/7/18 11:14	91	YES	91	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/8/18 13:19	6/8/18 14:12	52	YES	52	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/9/18 3:01	6/9/18 5:31	149	YES	149	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/9/18 6:17	6/9/18 8:31	133	YES	133	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/9/18 10:20	6/9/18 10:22	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	6/18/18 13:32	6/18/18 13:45	12	YES	12	Bypass necessary to protect plant equipment.	N/A
Line 3	SV104	NOx/SO2	6/18/18 14:07	6/18/18 15:03	56	YES	56	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 3	SV105	NOx/SO2	6/23/18 15:02	6/23/18 18:32	210	YES	210	Bypass necessary to protect plant equipment.	N/A
Line 3	SV106	NOx/SO2	6/27/18 8:22	6/27/18 12:20	237	YES	237	Bypass necessary to protect plant equipment.	N/A
Line 3	SV107	NOx/SO2	6/29/18 7:38	6/29/18 12:10	271	YES	271	Bypass necessary to protect plant equipment.	N/A
Line 3	SV108	NOx/SO2	6/29/18 12:14	6/29/18 12:22	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	4/5/18 9:58	4/5/18 11:19	80	YES	80	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	4/5/18 11:21	4/5/18 11:23	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	4/9/18 19:31	4/9/18 21:59	147	YES	147	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	4/23/18 17:59	4/24/18 11:16	1037	YES	1037	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	4/24/18 11:18	4/24/18 17:00	341	YES	341	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	4/24/18 17:40	4/24/18 18:08	28	YES	28	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	4/24/18 18:33	4/24/18 19:44	70	YES	70	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	4/24/18 20:32	4/24/18 20:50	18	YES	18	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	4/25/18 11:29	4/25/18 12:23	54	YES	54	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	4/26/18 7:32	4/26/18 7:42	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	4/30/18 12:48	4/30/18 13:14	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	5/2/18 0:12	5/2/18 4:17	164	YES	164	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	5/3/18 13:52	5/3/18 17:27	214	YES	214	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	5/18/18 8:50	5/18/18 13:32	282	YES	282	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	5/30/18 15:14	5/30/18 16:21	66	YES	66	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 4	SV118	NOx/SO2	5/31/18 13:09	5/31/18 13:40	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	6/4/18 9:01	6/4/18 9:13	12	YES	12	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	6/27/18 7:30	6/27/18 17:34	603	YES	603	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	6/27/18 17:58	6/27/18 17:59	1	YES	1	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	6/27/18 18:59	6/27/18 21:07	128	YES	128	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	6/29/18 7:38	6/29/18 10:56	197	YES	197	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/2/18 7:38	4/2/18 11:39	240	YES	240	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/10/18 10:17	4/10/18 13:07	170	YES	170	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/11/18 6:35	4/11/18 6:43	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/13/18 17:15	4/13/18 17:19	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/13/18 17:25	4/13/18 17:35	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/13/18 17:39	4/13/18 17:41	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/13/18 17:45	4/13/18 17:49	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:00	4/14/18 23:08	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:10	4/14/18 23:24	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:28	4/14/18 23:32	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:36	4/14/18 23:40	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:42	4/14/18 23:46	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:50	4/14/18 23:54	4	YES	4	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 5	SV127	NOx/SO2	4/16/18 15:00	4/16/18 15:59	58	YES	58	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/18/18 7:59	4/19/18 2:15	1096	YES	1096	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/19/18 2:51	4/19/18 3:48	56	YES	56	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 7:57	4/23/18 8:03	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 8:07	4/23/18 8:13	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 8:17	4/23/18 8:29	12	YES	12	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 8:31	4/23/18 8:35	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 8:37	4/23/18 8:46	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 8:48	4/23/18 8:58	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 9:00	4/23/18 9:06	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 9:10	4/23/18 9:14	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 9:16	4/23/18 9:20	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 9:22	4/23/18 9:26	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 9:28	4/23/18 9:38	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 9:42	4/23/18 9:48	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/25/18 8:10	4/25/18 8:47	36	YES	36	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/25/18 8:53	4/25/18 9:03	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/25/18 9:09	4/25/18 9:15	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/25/18 9:39	4/25/18 9:45	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 16:54	4/28/18 16:58	4	YES	4	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 5	SV127	NOx/SO2	4/28/18 17:00	4/28/18 17:06	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:08	4/28/18 17:10	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:15	4/28/18 17:17	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:19	4/28/18 17:23	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:25	4/28/18 17:27	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:31	4/28/18 17:35	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:39	4/28/18 17:47	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:49	4/28/18 17:53	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 10:24	4/30/18 10:32	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 10:34	4/30/18 10:40	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 10:42	4/30/18 10:48	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 10:52	4/30/18 11:00	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 11:08	4/30/18 11:14	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 11:16	4/30/18 11:21	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 11:23	4/30/18 11:35	12	YES	12	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/2/18 10:47	5/2/18 12:05	78	YES	78	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/4/18 6:19	5/4/18 11:14	215	YES	215	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/15/18 8:03	5/15/18 8:48	44	YES	44	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/15/18 8:52	5/15/18 8:58	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/15/18 9:02	5/15/18 9:54	52	YES	52	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 5	SV127	NOx/SO2	5/17/18 10:32	5/17/18 10:54	22	YES	22	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/17/18 10:56	5/17/18 11:05	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/17/18 11:07	5/17/18 11:29	22	YES	22	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/18/18 7:36	5/18/18 10:29	173	YES	173	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/20/18 16:32	5/20/18 16:36	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/21/18 13:44	5/21/18 14:16	32	YES	32	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/26/18 5:36	5/26/18 5:59	23	YES	23	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/26/18 8:59	5/26/18 13:19	180	YES	180	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/26/18 13:27	5/26/18 13:43	16	YES	16	Bypass necessary to protect plant equipment.	N/A
Line 6	SV128	NOx/SO3	5/29/18 22:32	5/29/18 22:59	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 7	SV129	NOx/SO4	5/30/18 9:59	5/31/18 1:18	919	YES	919	Bypass necessary to protect plant equipment.	N/A
Line 8	SV130	NOx/SO5	6/7/18 13:39	6/7/18 19:29	350	YES	350	Bypass necessary to protect plant equipment.	N/A
Line 9	SV131	NOx/SO6	6/13/18 10:08	6/13/18 14:06	238	YES	238	Bypass necessary to protect plant equipment.	N/A
Line 10	SV132	NOx/SO7	6/14/18 11:56	6/14/18 12:12	16	YES	16	Bypass necessary to protect plant equipment.	N/A
Line 11	SV133	NOx/SO8	6/15/18 10:32	6/15/18 10:36	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 12	SV134	NOx/SO9	6/18/18 1:08	6/18/18 4:41	213	YES	213	Bypass necessary to protect plant equipment.	N/A
Line 13	SV135	NOx/SO10	6/25/18 17:01	6/25/18 17:17	16	YES	16	Bypass necessary to protect plant equipment.	N/A
Line 14	SV136	NOx/SO11	6/26/18 15:47	6/26/18 16:01	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 15	SV137	NOx/SO12	6/26/18 16:03	6/26/18 16:13	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 16	SV138	NOx/SO13	6/27/18 16:05	6/27/18 16:47	42	YES	42	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 17	SV139	NOx/SO14	6/29/18 2:48	6/29/18 3:50	62	YES	62	Bypass necessary to protect plant equipment.	N/A
Line 18	SV140	NOx/SO15	6/29/18 7:38	6/29/18 10:03	145	YES	145	Bypass necessary to protect plant equipment.	N/A
Line 19	SV141	NOx/SO16	6/29/18 14:07	6/29/18 14:55	48	YES	48	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/1/18 20:28	4/1/18 21:02	34	YES	34	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/2/18 1:56	4/2/18 2:22	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/2/18 15:44	4/2/18 16:09	24	YES	24	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/3/18 3:06	4/3/18 3:32	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/3/18 21:51	4/3/18 22:21	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/5/18 7:33	4/5/18 13:08	335	YES	335	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/6/18 10:50	4/6/18 11:23	32	YES	32	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/7/18 8:11	4/7/18 8:44	32	YES	32	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/7/18 9:30	4/7/18 9:44	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/11/18 0:48	4/11/18 1:04	16	YES	16	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/14/18 17:37	4/14/18 19:20	102	YES	102	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/17/18 10:11	4/17/18 10:21	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/28/18 4:50	4/28/18 5:35	44	YES	44	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/30/18 5:41	4/30/18 6:37	56	YES	56	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/30/18 9:03	4/30/18 9:21	18	YES	18	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/30/18 9:54	4/30/18 10:20	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/30/18 10:26	4/30/18 10:48	22	YES	22	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 6	SV144	NOx/SO2	4/30/18 10:54	4/30/18 11:19	24	YES	24	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/30/18 11:23	4/30/18 11:35	12	YES	12	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	5/2/18 4:39	5/2/18 4:53	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	5/3/18 10:39	5/3/18 10:45	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	5/8/18 22:32	5/8/18 22:59	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	5/9/18 8:59	5/9/18 21:03	724	YES	724	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	5/9/18 21:31	5/9/18 21:41	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	5/10/18 13:28	5/10/18 13:34	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	5/14/18 21:09	5/14/18 21:29	20	YES	20	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	5/21/18 17:30	5/21/18 18:19	48	YES	48	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	5/24/18 12:49	5/24/18 15:36	166	YES	166	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	5/30/18 17:17	5/30/18 17:33	16	YES	16	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	6/10/18 23:33	6/11/18 0:59	85	YES	85	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	6/14/18 13:59	6/15/18 15:10	1511	YES	1511	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	6/19/18 9:28	6/19/18 10:37	68	YES	68	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	6/20/18 10:37	6/20/18 11:27	20	YES	20	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	6/20/18 12:10	6/20/18 13:04	54	YES	54	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	6/25/18 11:14	6/25/18 11:36	22	YES	22	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	6/25/18 11:38	6/25/18 11:44	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	6/26/18 11:00	6/26/18 12:29	88	YES	88	Bypass necessary to protect plant equipment.	N/A

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5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 6	SV144	NOx/SO2	6/29/18 7:38	6/29/18 10:14	175	YES	175	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	6/29/18 10:58	6/29/18 11:02	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/7/18 8:05	4/7/18 9:20	74	YES	74	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/8/18 2:47	4/8/18 5:04	137	YES	137	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/8/18 20:12	4/8/18 21:39	87	YES	87	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/18/18 14:14	4/18/18 15:04	50	YES	50	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/20/18 13:49	4/20/18 14:48	58	YES	58	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/29/18 20:38	4/29/18 21:37	58	YES	58	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/30/18 11:06	4/30/18 11:55	48	YES	48	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/1/18 10:54	5/1/18 12:10	76	YES	76	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/1/18 22:37	5/1/18 23:59	81	YES	81	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/2/18 8:59	5/2/18 21:04	725	YES	725	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/3/18 6:22	5/3/18 9:30	187	YES	187	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/3/18 10:26	5/3/18 11:15	48	YES	48	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/3/18 12:05	5/3/18 12:26	20	YES	20	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/15/18 6:06	5/15/18 18:15	728	YES	728	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/15/18 18:54	5/15/18 19:10	16	YES	16	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/10/18 19:55	6/10/18 20:09	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/10/18 21:12	6/10/18 21:20	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/10/18 22:33	6/10/18 22:59	25	YES	25	Bypass necessary to protect plant equipment.	N/A

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5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 7	SV151	NOx/SO2	6/14/18 17:59	6/15/18 17:51	1432	YES	1432	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/15/18 18:05	6/15/18 18:09	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/16/18 13:21	6/16/18 13:39	18	YES	18	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/18/18 13:28	6/18/18 13:53	24	YES	24	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/26/18 7:18	6/26/18 8:45	86	YES	86	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/26/18 11:04	6/26/18 12:07	62	YES	62	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/27/18 17:03	6/27/18 17:54	50	YES	50	Bypass necessary to protect plant equipment.	N/A
				5k) Total duration of allowable monitor bypass:			**346**	**hours**	

6) CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Signature of Responsible Official

Lawrence Sutherland

Printed Name of Responsible Official

General Manager - Minnesota Ore Operations

Title

July 27, 2018

Date

COMS audits

Subject item	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A								

Cylinder gas audit's (CGA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
SV103		MR001	NOx	2/22/2018	Low 1.9% Mid 1.6%	Pass	9/30/2018	RATA 2nd Qtr
SV118		MR002	NOx	2/22/2018	Low -1.3% Mid -0.3%	Pass	9/30/2018	RATA 2nd Qtr
SV127		MR003	NOx	2/22/2018	Low 2.6% Mid 1.9%	Pass	9/30/2018	RATA 2nd Qtr
SV144		MR004	NOx	2/22/2018	Low -0.1% Mid 0.7%	Pass	9/30/2018	RATA 2nd Qtr
SV151		MR005	NOx	2/22/2018	Low 3.4% Mid 2.7%	Pass	9/30/2018	RATA 2nd Qtr
SV103		MR001	SO2	2/22/2018	Low -0.8% Mid 2.3%	Pass	9/30/2018	RATA 2nd Qtr
SV118		MR002	SO2	2/22/2018	Low -2.8% Mid 0.1%	Pass	9/30/2018	RATA 2nd Qtr
SV127		MR003	SO2	2/22/2018	Low -2.8% Mid 1.5%	Pass	9/30/2018	RATA 2nd Qtr
SV144		MR004	SO2	2/22/2018	Low -4.7% Mid -1.8%	Pass	9/30/2018	RATA 2nd Qtr
SV151		MR005	SO2	2/22/2018	Low -3.3% Mid 1.0%	Pass	9/30/2018	RATA 2nd Qtr

Linearity

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
					Low			

N/A					Mid High			

Relative accuracy test audit (RATA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Relative accuracy	Pass/fail	Next test due by:	Comments
SV103		MR001	SO2	5/21/2018	2.5%	Pass	2nd Qtr 2019	
SV103		MR001	NOx	5/21/2018	9.5%	Pass	2nd Qtr 2019	
SV118		MR002	SO2	5/17/2018	2.9%	Pass	2nd Qtr 2019	
SV118		MR002	NOx	5/17/2018	1.7%	Pass	2nd Qtr 2019	
SV127		MR003	SO2	5/16/2018	13.2%	Pass	2nd Qtr 2019	
SV127		MR003	NOx	5/16/2018	13.3%	Pass	2nd Qtr 2019	
SV144		MR004	SO2	5/22/2018	6.0%	Pass	2nd Qtr 2019	
SV144		MR004	NOx	5/22/2018	13.2%	Pass	2nd Qtr 2019	
SV151		MR005	SO2	5/23/2018	8.2%	Pass	2nd Qtr 2019	
SV151		MR005	NOx	5/23/2018	10.3%	Pass	2nd Qtr 2019	

U. S. Steel Corporation
Minntac
Mountain Iron, Minnesota

Barr Engineering Co.
June 28, 2018

TABLE 1

RATA RESULTS SUMMARY
Line 3 Waste Gas Stack (SV103)
May 21, 2018

Sulfur Dioxide Emission Rate Relative Accuracy - Calculated Using the Reference Method Average						*Relative Accuracy Limit*			*20%*
SO_2, lb/hr	Run 1 0735-0756	Run 2 0825-0846	Run 3 0901-0922	Run 5 1023-1044	Run 6 1058-1119	Run 7 1133-1154	Run 8 1210-1231	Run 9 1244-1305	Run 10 1335-1356
Ref. Method lb/hr	95.3	80.9	98.5	87.2	97.0	86.5	88.2	100.4	83.9
CEM lb/hr	91.5	78.9	98.6	87.9	99.0	87.5	91.1	102.2	86.2
Difference	-3.8	-2.0	0.1	0.7	2.0	1.0	2.9	1.8	2.3
Average Difference	0.5	Standard Deviation of the Differences			2.2	**Relative Accuracy**			**2.5%**
Confidence Coefficient	1.7	Average Reference Method, lb/hr			90.9	Average CEM, lb/hr			91.4

Oxides of Nitrogen Emission Rate Relative Accuracy - Calculated Using the Reference Method Average						*Relative Accuracy Limit*			*20%*
NO_X, lb/hr	Run 1 0735-0756	Run 2 0825-0846	Run 3 0901-0922	Run 4 0937-0958	Run 5 1023-1044	Run 6 1058-1119	Run 7 1133-1154	Run 9 1244-1305	Run 10 1335-1356
Ref. Method lb/hr	163.8	145.8	206.2	198.6	208.8	176.1	176.8	189.3	175.3
CEM lb/hr	173.5	157.5	225.2	206.3	225.5	193.8	190.6	207.4	189.1
Difference	9.7	11.7	19.0	7.7	16.7	17.7	13.8	18.1	13.7
Average Difference	14.2	Standard Deviation of the Differences			4.0	**Relative Accuracy**			**9.5%**
Confidence Coefficient	3.0	Average Reference Method, lb/hr			182.3	Average CEM, lb/hr			196.5

U. S. Steel Corporation
Minntac
Mountain Iron, Minnesota

Barr Engineering Co.
June 26, 2018

TABLE 2

RATA RESULTS SUMMARY
Line 4 Waste Gas Stack (SV118)
May 17, 2018

Sulfur Dioxide Emission Rate Relative Accuracy - Calculated Using the Reference Method Average						***Relative Accuracy Limit***			***20%***
SO_2, lb/hr	Run 1 942-1003	Run 2 1014-1035	Run 3 1045-1106	Run 4 1154-1215	Run 5 1226-1247	Run 7 1358-1419	Run 8 1429-1450	Run 9 1502-1523	Run 10 1533-1554
Ref. Method lb/hr	54.1	55.8	61.1	68.7	78.2	88.1	75.9	65.4	73.6
CEM lb/hr	54.0	53.8	60.6	69.4	78.7	88.9	72.9	64.9	70.4
Difference	-0.1	-2.0	-0.5	0.7	0.5	0.8	-3.0	-0.5	-3.2
Average Difference	-0.8	Standard Deviation of the Differences			1.6	**Relative Accuracy**			**2.9%**
Confidence Coefficient	1.2	Average Reference Method, lb/hr			69.0	Average CEM, lb/hr			67.9

Oxides of Nitrogen Emission Rate Relative Accuracy - Calculated Using the Reference Method Average						***Relative Accuracy Limit***			***20%***
NO_X, lb/hr	Run 1 942-1003	Run 2 1014-1035	Run 3 1045-1106	Run 4 1154-1215	Run 5 1226-1247	Run 7 1358-1419	Run 8 1429-1450	Run 9 1502-1523	Run 10 1533-1554
Ref. Method lb/hr	202.3	206.0	215.6	208.9	236.7	217.5	203.2	180.5	195.8
CEM lb/hr	205.2	207.8	216.8	214.1	238.6	221.9	196.8	176.3	194.4
Difference	2.9	1.8	1.2	5.2	1.9	4.4	-6.4	-4.2	-1.4
Average Difference	0.6	Standard Deviation of the Differences			3.9	**Relative Accuracy**			**1.7%**
Confidence Coefficient	3.0	Average Reference Method, lb/hr			207.4	Average CEM, lb/hr			209.4

U. S. Steel Corporation
Minntac
Mountain Iron, Minnesota

Barr Engineering Co.
June 26, 2018

TABLE 3

RATA RESULTS SUMMARY
Line 5 Waste Gas Stack (SV127)
May 16, 2018

Sulfur Dioxide Emission Rate Relative Accuracy - Calculated Using the Reference Method Average						***Relative Accuracy Limit***			***20%***
SO_2, lb/hr	Run 2 1148-1213	Run 3 1225-1246	Run 4 1300-1321	Run 5 1333-1354	Run 6 1406-1427	Run 7 1439-1500	Run 8 1511-1532	Run 9 1545-1606	Run 10 1618-1639
Ref. Method lb/hr	64.1	57.7	60.9	60.7	58.8	65.8	61.6	67.1	60.1
CEM lb/hr	64.2	59.4	60.1	60.3	56.5	59.7	53.1	55.4	49.3
Difference	0.1	1.7	-0.8	-0.4	-2.3	-6.1	-8.5	-11.7	-10.8
Average Difference	-4.3	Standard Deviation of the Differences			5.1	**Relative Accuracy**			**13.2%**
Confidence Coefficient	3.9	Average Reference Method, lb/hr			61.9	Average CEM, lb/hr			57.6

Oxides of Nitrogen Emission Rate Relative Accuracy - Calculated Using the Reference Method Average						***Relative Accuracy Limit***			***20%***
NO_X, lb/hr	Run 2 1148-1213	Run 3 1225-1246	Run 4 1300-1321	Run 5 1333-1354	Run 6 1406-1427	Run 7 1439-1500	Run 8 1511-1532	Run 9 1545-1606	Run 10 1618-1639
Ref. Method lb/hr	309.0	297.0	330.3	318.8	304.5	312.4	301.1	311.0	292.8
CEM lb/hr	350.8	339.3	368.9	362.2	342.9	342.9	329.5	329.6	318.1
Difference	41.8	42.3	38.6	43.4	38.4	30.5	28.4	18.6	25.3
Average Difference	34.1	Standard Deviation of the Differences			8.8	**Relative Accuracy**			**13.3%**
Confidence Coefficient	6.7	Average Reference Method, lb/hr			308.5	Average CEM, lb/hr			342.7

U. S. Steel Corporation
Minntac
Mountain Iron, Minnesota

Barr Engineering Co.
June 26, 2018

TABLE 4

RATA RESULTS SUMMARY
Line 6 Waste Gas Stack (SV144)
May 22, 2018

Sulfur Dioxide Emission Rate Relative Accuracy - Calculated Using the Reference Method Average						***Relative Accuracy Limit***			***20%***
SO_2, lb/hr	Run 1 1026-1047	Run 2 1107-1128	Run 3 1145-1206	Run 4 1222-1243	Run 6 1418-1439	Run 8 1539-1600	Run 9 1615-1636	Run 10 1647-1708	Run 11 1721-1742
Ref. Method lb/hr	31.3	32.7	28.9	29.0	32.4	33.6	36.3	32.6	32.8
CEM lb/hr	30.2	32.1	29.2	26.0	30.5	31.9	34.6	33.4	33.1
Difference	-1.1	-0.6	0.3	-3.0	-1.9	-1.7	-1.7	0.8	0.3
Average Difference	-0.9	Standard Deviation of the Differences			1.3	**Relative Accuracy**			**6.0%**
Confidence Coefficient	1.0	Average Reference Method, lb/hr			32.2	Average CEM, lb/hr			31.2

Oxides of Nitrogen Emission Rate Relative Accuracy - Calculated Using the Reference Method Average						***Relative Accuracy Limit***			***20%***
NO_X, lb/hr	Run 1 1026-1047	Run 2 1107-1128	Run 4 1222-1243	Run 5 1310-1331	Run 6 1418-1439	Run 8 1539-1600	Run 9 1615-1636	Run 10 1647-1708	Run 11 1721-1742
Ref. Method lb/hr	260.8	263.7	263.3	263.5	264.2	253.8	253.8	246.8	245.5
CEM lb/hr	290.8	300.1	291.3	293.0	295.4	286.3	286.1	280.7	279.1
Difference	30.0	36.4	28.0	29.5	31.2	32.5	32.3	33.9	33.6
Average Difference	31.9	Standard Deviation of the Differences			2.6	**Relative Accuracy**			**13.2%**
Confidence Coefficient	2.0	Average Reference Method, lb/hr			257.3	Average CEM, lb/hr			290.5

U. S. Steel Corporation
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Mountain Iron, Minnesota

Barr Engineering Co.
June 28, 2018

TABLE 5

RATA RESULTS SUMMARY
Line 7 Waste Gas Stack (SV151)
May 23, 2018

Sulfur Dioxide Emission Rate Relative Accuracy - Calculated Using the Reference Method Average						***Relative Accuracy Limit***			***20%***
SO_2, lb/hr	Run 1 0830-0851	Run 3 1055-1116	Run 4 1126-1147	Run 5 1158-1219	Run 6 1230-1251	Run 7 1302-1323	Run 8 1334-1355	Run 9 1405-1426	Run 10 1437-1458
Ref. Method lb/hr	37.4	61.9	65.1	53.8	60.7	84.4	58.6	57.7	64.9
CEM lb/hr	33.7	55.7	60.4	48.5	56.0	81.8	57.8	58.8	66.7
Difference	-3.7	-6.2	-4.7	-5.3	-4.7	-2.6	-0.8	1.1	1.9
Average Difference	-2.8	Standard Deviation of the Differences			2.9	**Relative Accuracy**			**8.2%**
Confidence Coefficient	2.2	Average Reference Method, lb/hr			60.5	Average CEM, lb/hr			57.7

Oxides of Nitrogen Emission Rate Relative Accuracy - Calculated Using the Reference Method Average						***Relative Accuracy Limit***			***20%***
NO_X, lb/hr	Run 1 0830-0851	Run 2 1022-1043	Run 3 1055-1116	Run 5 1158-1219	Run 6 1230-1251	Run 7 1302-1323	Run 8 1334-1355	Run 9 1405-1426	Run 10 1437-1458
Ref. Method lb/hr	182.0	315.5	323.5	309.7	316.7	330.5	267.3	304.0	301.9
CEM lb/hr	196.3	336.9	348.9	338.1	342.9	359.7	297.4	333.7	332.8
Difference	14.3	21.4	25.4	28.4	26.2	29.2	30.1	29.7	30.9
Average Difference	26.2	Standard Deviation of the Differences			5.3	**Relative Accuracy**			**10.3%**
Confidence Coefficient	4.1	Average Reference Method, lb/hr			294.6	Average CEM, lb/hr			320.7

Summary Table by Monitor Downtime Type
U. S. Steel - Minntac
2nd Quarter 2018

NOx

Line	Duration (Hrs)	Description
Line 3	4	Automatic Calibration
	7	Data Handling System Malfunction
	6	Excess Drift Ancillary Analyzer
	3	Excess Drift Primary Analyzer
	2	Primary Analyzer Malfunction
	2	Sample Interface Malfunction
Line 4	0	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	2	Excess Drift Primary Analyzer
	8	Primary Analyzer Malfunction
Line 5	2	Automatic Calibration
	7	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	13	Excess Drift Primary Analyzer
	2	Primary Analyzer Malfunction
Line 6	1	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	0	Excess Drift Primary Analyzer
	23	Primary Analyzer Malfunction
Line 7	1	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	5	Excess Drift Primary Analyzer
	0	Primary Analyzer Malfunction

SO2

Line	Duration (Hrs)	Description
Line 3	4	Automatic Calibration
	7	Data Handling System Malfunction
	6	Excess Drift Ancillary Analyzer
	4	Excess Drift Primary Analyzer
	2	Primary Analyzer Malfunction
Line 4	0	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	0	Excess Drift Primary Analyzer
	8	Primary Analyzer Malfunction
	0	Preventative Maintenance
Line 5	2	Automatic Calibration
	7	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	2	Excess Drift Primary Analyzer
	2	Primary Analyzer Malfunction
	0	Preventative Maintenance
Line 6	2	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	12	Excess Drift Primary Analyzer
	0	Primary Analyzer Malfunction
Line 7	0	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	0	Excess Drift Primary Analyzer
	0	Primary Analyzer Malfunction